WHAT IS CLAIMED IS:

1. A method for simulating, analyzing and/or designing an automated assembly system that includes a plurality of resources, comprising:

defining at least one cell from an automated assembly line;

associating an action table with each cell, the action table of a respective cell specifying all process steps that are executed in the respective cell;

calculating a duration, a success rate and a repair time for each process step using fundamental data of the plurality of resources; and

associating the duration, the success rate and the repair time with each process step in each action table.

2. The method of claim 1, wherein the calculating step comprises obtaining the fundamental data of the plurality of resources from a resource database.

3. The method of claim 1, further comprising using a discrete event simulator to process the duration, the success rate and the repair time in accordance with the action table of each cell.

4. The method of claim 1, wherein the fundamental data used in the step of calculating the duration for each process step is related to machine specifications.

5. The method of claim 1, wherein the fundamental data used in the step of calculating the duration for each process step is related to at least one human operator.

6. The method of claim 1, wherein the fundamental data used in the step of calculating the repair time for each process step is related to at least one human operator.

7. The method of claim 1, wherein the fundamental data used in the step of calculating the success rate for each process step is related to both product tolerances and process tolerances.

8. The method of claim 7, further comprising using a discrete event simulator to process the duration, the success rate and the repair time in accordance with the action table of each cell.

9. The method of claim 7, wherein the fundamental data used in the step of calculating the success rate for each process step further is related to equipment failure rates.

10. The method of claim 7, further comprising accounting for a stack-up of errors related to both product tolerances and process tolerances throughout the automated assembly line from an upstream cell to a downstream cell.

11. The method of claim 7, further comprising modifying at least some of the fundamental data of the resources to provide comparison of changes to the automated assembly system.

12. The method of claim 7, further comprising modifying at least one of the process steps to provide comparison of changes to the automated assembly system.

13. The method of claim 1, further comprising calculating an overall throughput of the automated assembly system using the action table.

14. The method of claim 1, further comprising associating at least one operator with the automated assembly system.

15. The method of claim 14, further comprising using a discrete event simulator to process fundamental data related to the at least one operator.

16. The method of claim 15, further comprising dynamically scheduling the at least one operator using fundamental data related to the at least one operator and data from the discrete event simulator.

17. A system for simulating, analyzing and/or designing an automated assembly system, comprising:

a discrete event simulator that simulates operation of the automated assembly system; and

a three-dimensional kinematic and dynamic simulator coupled with the discrete event simulator, the kinematic and dynamic simulator generating timing data for the automated assembly system that is used by the discrete event simulator.

18. A system for determining a costed-throughput of an automated assembly system, comprising:

a failure model based on both product tolerances and process tolerances;

a kinematic and dynamic simulator;

a discrete event simulator; and

a financial model, wherein the failure model and the kinematic and dynamic simulator provide data to the discrete event simulator, the discrete event simulator simulates operation of the automated assembly system to obtain a

throughput and a yield for the automated assembly system, and the financial model determines a cost of the automated assembly system based on the simulated operation and fundamental data of resources included in the automated assembly system.

19. The system of claim 18, wherein the financial model takes into account flexible automation and includes means for comparing flexible automation with at least one of manual assembly and fixed automation.

20. The system of claim 19, wherein the means for comparing uses changes in fundamental data of resources included in the automated assembly system and changes in process steps of the automated assembly system.